

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-3 (Canceled).

Claim 4 (Currently Amended): A receiver that receives transmission signals transmitted in a communication system using plural frequency channels, comprising:

a phase locked loop (PLL) having an output signal being formed of differential information output means for frequency dividing an input signal in a predetermined frequency division ratio to obtain a frequency-divided signal and for outputting differential information between said frequency-divided signal and a clock pulse, filter means for outputting a differential signal voltage corresponding to said differential information, and a voltage-controlled oscillator for controlling the a frequency of said output signal according to said differential signal voltage;

receiver means for receiving ~~said~~ a transmission signal having as a local oscillation frequency the frequency of ~~an~~ the output signal output from said PLL;

estimation means for estimating a receiving channel corresponding to ~~the~~ a transmission channel of said transmission signal; and

control means for controllably sampling a plurality of times the frequency of said output signal of said PLL from a receiving channel at one frequency to a receiving channel at another frequency when the frequency of ~~an~~ the output signal from said PLL is set to the frequency of a the receiving channel corresponding to the transmission channel of said transmission signal,

wherein said estimation means estimates a the receiving channel corresponding to a the transmission channel for said transmission signal based on the received signal received by

said receiver means, in the period during which said PLL samples from a receiving channel at one frequency to a receiving channel at another frequency, and

wherein said estimation means comprises:

a signal strength measuring circuit for measuring the signal strength of said received signal;

an estimation circuit for estimating the signal strength measured in said signal strength measuring circuit and a the receiving channel corresponding to the transmission channel of said transmission signal based on a hopping pattern in said receiver.

Claim 5 (Currently Amended): A receiver defined in Claim 4, wherein said estimation means comprises:

a modulation-system discriminator for discriminating the modulation system of said received signal; and

an estimation circuit for estimating the discrimination result by said modulation-system discriminator and a the receiving channel corresponding to the transmission channel of said transmission signal based on a hopping pattern in said ~~frequency hopping system~~ receiver.

Claims 6-9 (Canceled).

Claim 10 (Currently Amended): A receiver that receives transmission signals transmitted in a communication system using plural frequency channels, comprising:

a phase locked loop (PLL) having an output signal being formed ~~[[.]]~~ differential information output means for frequency dividing an input signal in a predetermined

frequency division ratio to obtain a frequency-divided signal and for outputting differential information between said frequency-divided signal and a clock pulse, a first filter to which a first time constant is set, a second filter to which a second time constant slower than said first time constant is set, filter means for outputting a differential signal voltage corresponding to said differential information, and a voltage-controlled oscillator for controlling ~~the~~ a frequency of said output signal according to said differential signal voltage;

time-constant switching means for switching a the time constant of said filter means;

receiver means for receiving ~~said a~~ a transmission signal having as a ~~local oscillation~~ transmission frequency the frequency of ~~an~~ the output signal output from said PLL;

estimation means for estimating a receiving channel corresponding to ~~the~~ a transmission channel of said transmission signal; and

control means for performing switching control such that said time-constant switching means switches ~~said filter means~~ from said first filter to said second filter when the frequency of ~~an~~ the output signal from said PLL is set to the frequency of a ~~the~~ receiving channel corresponding to the transmission channel of said transmission signal and for controllably sampling a plurality of times the frequency of ~~an~~ the output signal output from said PLL from a receiving channel at one frequency to a receiving channel at another frequency,

wherein said estimation means estimates a ~~the~~ receiving channel corresponding to the transmission channel for said transmission signal based on the received signal received by said receiver means, in the period during which said second filter samples at low rate ~~an~~ the output signal output from said PLL from a receiving channel at one frequency to a receiving channel at another frequency, and

wherein said estimation means comprises:

a signal strength measuring circuit for measuring ~~the~~ a signal strength of said received signal; and

an estimation circuit for estimating the signal strength measured in said signal strength measuring circuit and ~~a~~ the receiving channel corresponding the transmission channel of said transmission signal based on a hopping pattern in said receiver.

Claim 11 (Currently Amended): A receiver that receives transmission signals transmitted in a communication system using plural frequency channels, comprising:

a phase locked loop (PLL) being formed of differential information output means for frequency dividing an input signal in a predetermined frequency division ratio to obtain a frequency-divided signal and for outputting differential information between said frequency-divided signal and a clock pulse, a first filter to which a first time constant is set, a second filter to which a second time constant slower than said first time constant is set, filter means for outputting a differential signal voltage corresponding to said differential information, and a voltage-controlled oscillator for controlling ~~the~~ a frequency of said output signal according to said differential signal voltage;

time-constant switching means for switching ~~a~~ the time constant of said filter means;

receiver means for receiving said ~~a~~ transmission signal having as a local oscillation frequency the frequency of ~~an~~ the output signal output from said PLL;

estimation means for estimating a receiving channel corresponding to ~~the~~ a transmission channel of said transmission signal; and

control means for performing switching control such that said time-constant switching means switches said filter means from said first filter to said second filter when the frequency of ~~an~~ the output signal from said PLL is set to the frequency of ~~a~~ the receiving channel corresponding to the transmission channel of said transmission signal and for controllably sampling a plurality of times the frequency of ~~an~~ the output signal output from said PLL from a receiving channel at one frequency to a receiving channel at another frequency,

wherein said estimation means estimates a the receiving channel corresponding to the transmission channel for said transmission signal based on the received signal received by said receiver means, in the period during which said second filter samples at low rate ~~an~~ the output signal output from said PLL from a receiving channel at one frequency to a receiving channel at another frequency, and

wherein said estimation means comprises:

a modulation-system discriminator for discriminating ~~the~~ a modulation system of said received signal; and

an estimation circuit for estimating ~~the~~ a discrimination result by said modulation-system discriminator and a the receiving channel corresponding to the transmission channel of said transmission signal based on a hopping pattern in said receiver.

Claim 12 (Currently Amended): A receiver that receives transmission signals transmitted in a communication system using plural frequency channels, comprising:

a phase locked loop (PLL) being formed of ~~of~~ of differential information output means for frequency dividing an input signal in a predetermined frequency division ratio to obtain a frequency-divided signal and for outputting differential information between said frequency-divided signal and a clock pulse, a first filter to which a first time constant is set, a second filter to which a second time constant slower than said first time constant is set, filter means for outputting a differential signal voltage corresponding to said differential information, and a voltage-controlled oscillator for controlling ~~the~~ a frequency of said ~~an~~ an output signal according to said differential signal voltage;

time-constant switching means for switching ~~the~~ a time constant of said filter means;

receiver means for receiving ~~said a~~ a transmission signal having as a local oscillation frequency the frequency of ~~an~~ the output signal output from said PLL;

estimation means for estimating a receiving channel corresponding to ~~the a~~ a transmission channel of said transmission signal; and

control means for performing switching control such that said time-constant switching means switches ~~said filter means~~ from said first filter to said second filter when the frequency of ~~an~~ the output signal from said PLL is set to the frequency of a the receiving channel corresponding to the transmission channel of said transmission signal and for controllably sampling a plurality of times the frequency of ~~an~~ the output signal output from said PLL from a the receiving channel at one frequency to a receiving channel at another frequency,

wherein said estimation means estimates a the receiving channel corresponding to the transmission channel for said transmission signal based on the received signal received by said receiver means, in the period during which said second filter changes at low rate ~~an~~ the output signal output from said PLL from a receiving channel at one frequency to a receiving channel at another frequency, and

wherein said estimation means comprises:

a signal strength measuring circuit for measuring the signal strength of said received signal;

a modulation-system discriminator for discriminating the modulation system of said received signal; and

an estimation circuit for estimating a the signal strength measured by said signal strength measuring circuit, a the discrimination ~~result~~ of said modulation-system discriminator, and a the receiving channel corresponding to the transmission channel of said transmission signal based on a hopping pattern in said receiver.

Claims 13-14 (Canceled).

Claim 15 (Currently Amended): A receiver that receives transmission signals transmitted in a communication system using plural frequency channels, comprising:

- a plurality of receiving antennas for receiving said transmission signals;
- a switching circuit for selectively switching outputs from said plurality of receiving antennas in a time-division mode to output received signals;
- a phase locked loop (PLL) for outputting frequency-controlled output signals;
- receiver means for receiving ~~said~~ a received signal from said switching circuit using as a local oscillation signal ~~said~~ an output signal output from said PLL;
- estimation means for estimating a receiving channel corresponding to ~~the~~ a transmission channel of ~~said~~ a transmission signal; and
- control means for controllably sampling the frequency of said output signal from said PLL, from a receiving channel at one frequency to a receiving channel at another frequency when the frequency of ~~an~~ the output signal from said PLL is set to a local oscillation frequency according to ~~a~~ the receiving channel corresponding to the transmission channel for said transmission signal;

wherein said estimation means includes a signal strength measuring circuit for measuring ~~the~~ a signal strength of said received signal every unit period during which each of ~~outputs of said~~ plurality of receiving ~~received~~ antennas is selected and then synthesizing said signal strengths over said unit ~~selection~~ period;

said estimation means estimating ~~a~~ the receiving channel corresponding to the transmission channel for said transmission signal based on a synthesized signal strength in the period during which the frequency of said output signal from said PLL is sampled to a

local oscillation frequency corresponding to a the receiving channel at one frequency and a the receiving channel at another frequency.

Claim 16 (Currently Amended): A receiver that receives transmission signals transmitted in a communication system using plural frequency channels, comprising:

a plurality of receiving antennas for receiving said ~~received~~ transmission signals;

a switching circuit for selectively switching outputs from said plurality of receiving antennas in a time-division mode to output a received signal;

a phase locked loop (PLL) for outputting frequency-controlled output signals, said PLL including a loop filter;

receiver means for receiving said ~~a~~ a received signal from said switching circuit, using as a local oscillation signal said ~~an~~ an output signal output from said PLL;

estimation means for estimating a receiving channel corresponding to ~~the~~ a transmission channel of said ~~a~~ a transmission signal; and

control means for switching ~~the~~ a time constant of said loop filter when ~~the~~ a frequency of ~~an~~ the output signal from said PLL is set to the local oscillation frequency according to a the receiving channel corresponding to the transmission channel of said transmission signal and controllably sampling the frequency of said output signal from said PLL, from a receiving channel at one frequency to a receiving channel at another frequency;

wherein said estimation means includes a signal strength measuring means for measuring ~~the~~ a signal strength of said received signal every unit selection period during which ~~the~~ an output of each of said plurality of receiving antennas is selected, and synthesizing said signal strengths over said unit selection period, said estimation means estimating a the receiving channel corresponding to the transmission channel for said transmission signal based on ~~the~~ a signal strength synthesized in the period during which said



loop filter changes the frequency of said output signal from said PLL, ~~to~~ from a local oscillation frequency corresponding to a the receiving channel at one ~~terminal and a~~ frequency to the receiving channel at ~~the other terminal~~ another frequency.

Claim 17 (Original): A receiver defined in Claim 15 or 16, wherein said communication system comprises a frequency hopping system for spread spectrum communication.

Claim 18 (Currently Amended): A receiver defined in Claim 17, wherein said estimation circuit estimates a the receiving channel corresponding to the transmission channel for said transmission channel based on said ~~synthesized~~ signal strength synthesized and a hopping pattern in said frequency hopping system.